

# Unit 1 Day 5

Compositions & Quiz

# Warm Up



Given triangle  $GHI$  with  $G(-2, 1)$ ,  $H(3, 4)$  and  $I(1, 5)$ , find the points of the image under the following transformations and write the Algebraic Rule for each.

1) Translate right 2, down 3

$$G'(0, -2), H'(5, 1), I'(3, 2)$$

$$(x, y) \rightarrow (x+2, y-3)$$

2) Reflect over the x-axis

$$G'(-2, -1), H'(3, -4), I'(1, -5)$$

$$(x, y) \rightarrow (x, -y)$$

3) Rotate 90 degrees, counter-clockwise

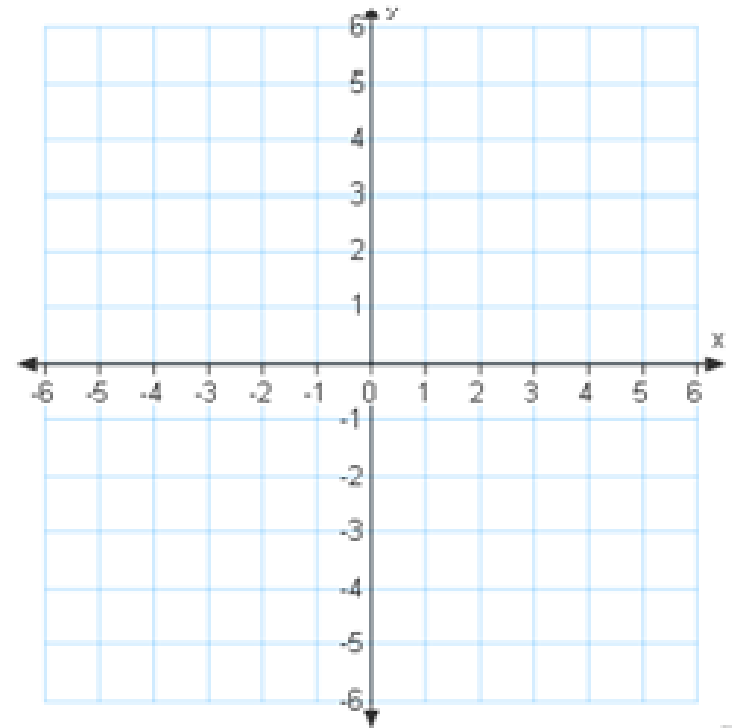
$$G'(-1, -2), H'(-4, 3), I'(-5, 1)$$

$$(x, y) \rightarrow (-y, x)$$

4) Dilate with a scale factor of 3

$$G'(-6, 3), H'(9, 12), I'(3, 15)$$

$$(x, y) \rightarrow (3x, 3y)$$



# Day 4 Homework

1. Describe the transformation given by rule  $(x, y) \rightarrow (3x, y)$ . Is it an isometry?

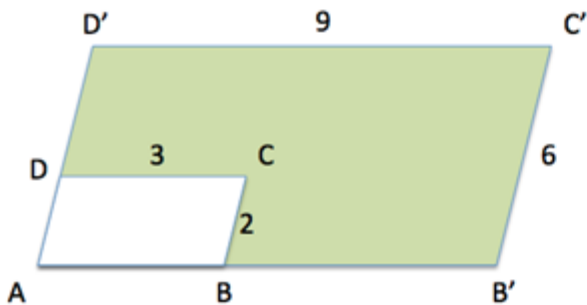
**Horizontal dilation. This is not an isometry.**

2. Write a rule that would cause a dilation by 3; a dilation by  $1/2$ .

**$(x, y) \rightarrow (3x, 3y)$ ;  $(x, y) \rightarrow (1/2x, 1/2y)$**

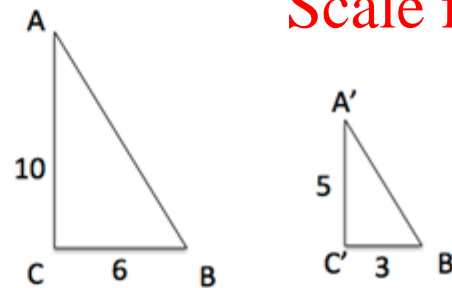
3. Find the scale factor of the dilation that maps ABCD to A'B'C'D'.

**Scale factor: 3**



4. Find the scale factor of the dilation that maps ABC to A'B'C'.

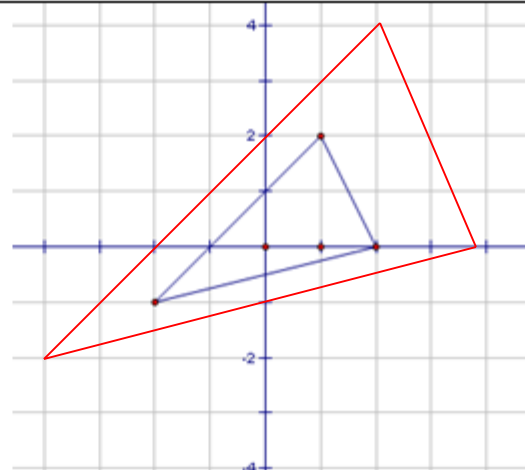
**Scale factor: 1/2**



5. Graph the dilation of the object shown using a scale factor of 2.

Motion rule:

**$(x, y) \rightarrow (2x, 2y)$**

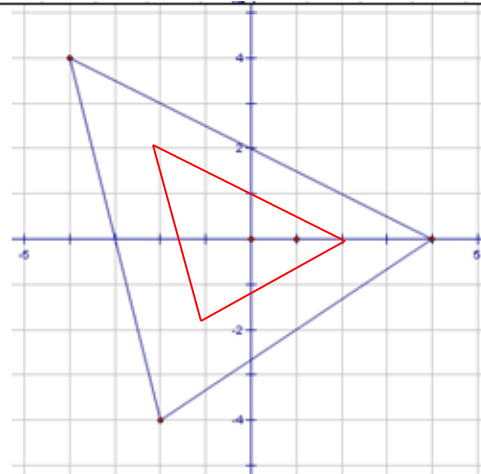


# Day 4 Homework

6. Graph the dilation of the object shown using a scale factor of  $\frac{1}{2}$ .

Motion rule:

$$(x,y) \rightarrow (1/2x, 1/2y)$$



**Advanced:**

7. The package for a model airplane states the scale is 1:63. The length of the model is 7.6 cm. What is the length of the actual airplane?

**Actual airplane: 478.8 cm**

8. Another model airplane states the scale is 1:96. The length of the real airplane is 48 feet. What is the length of the model?

**Model:  $\frac{1}{2}$  foot or 6 inches**

# Day 5 HW Answers:

Packet p. 13-14 Even

2)  $2/3$

12) 9

4)  $2/3$

14)  $13/5$

6)  $6/7$

16)  $13/12$

8)  $1/16$

18)  $12/13$

10)  $(x+1)/2$

20)  $x=10$

22)  $x=20$

24)  $x=-1/3$

26)  $x=5/2$

# Day 5 HW Answers:

## Packet p. 15

1)  $x=60$        $y=120$        $z=120$        $w=120$

2)  $x=80$        $y=100$        $z=80$        $w=80$

3)  $x=61$        $y=119$        $z=119$

4)  $X=80$        $y=100$        $z=80$        $w=100$

5)  $x=60$        $y=150$

6)  $x=60$

7)  $x=80$        $y=90$

# Homework

- Packet p. 18-20 odds  
Packet p. 16-17 Evens and #1



Print HW Packet Day 5-7, if not yet! That's where tonight's homework is located

# **Did you print your packet for today?**

If not, be sure to print it tonight!

If you still can't print tonight, you still must do the homework! If this happens, do your homework on notebook paper, looking at the packet on Blackboard.

Remember, if you'd like me to print for you, have a parent email me ASAP.





# Compositions

A glide reflection is the composition of a translation and a reflection where the translation motion is parallel to the reflection line.

**Complete the Discovery Activity:**

**Notes p. 18 – 20 #1-14**

**If needed, borrow a ruler & protractor  
(front table)**



# Summary

A composition is a sequence of transformations.

Two reflections across parallel lines is the same as a translation.

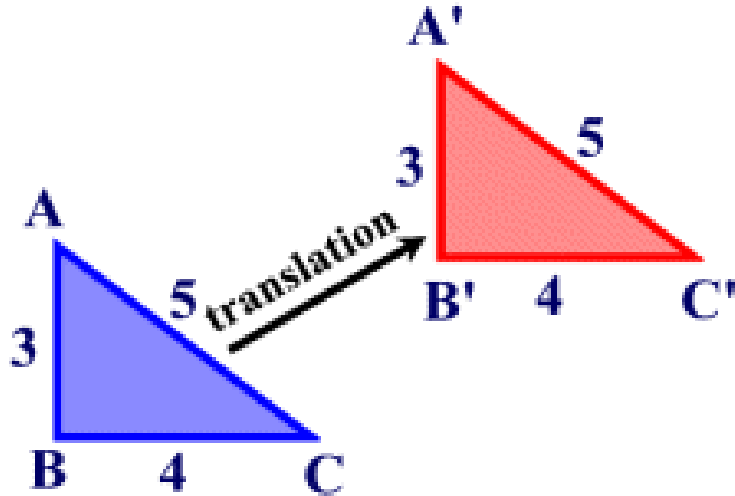
A rotation is the same as a double reflection around nonparallel (or intersecting) lines.

The point of rotation is the intersection of the nonparallel lines.

# Summary Continued

Same Orientation: Facing the same direction

TIP to check: If vertices are labeled alphabetically with  $ABC$  and  $A'B'C'$ , read them in alphabetical order. They should read both clockwise or both counterclockwise.



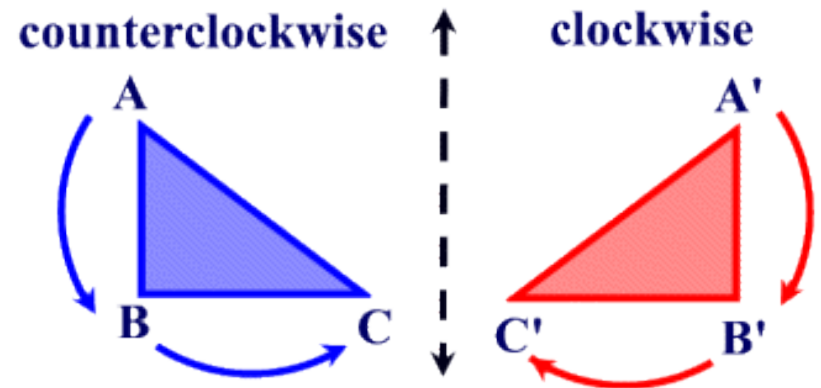
Ex: To do alphabetical order, you read  $ABC$  and  $A'B'C'$  counterclockwise, so these figures have the same orientation.

# Summary Continued

Opposite Orientation: Facing the opposite direction

TIP to check: If vertices are labeled alphabetically with  $ABC$  and  $A'B'C'$ , read them in alphabetical order. They should read one clockwise and one counterclockwise.

Ex: To do alphabetical order, you must read  $ABC$  counterclockwise but must read  $A'B'C'$  clockwise. So these figures have opposite orientation.

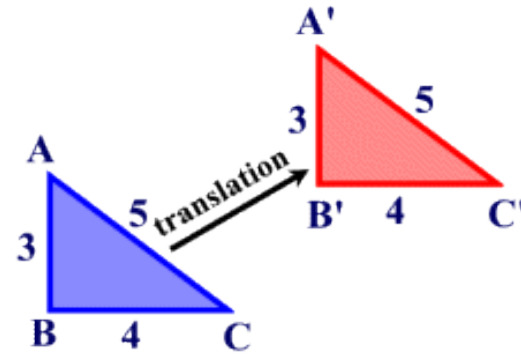


# Summary Continued

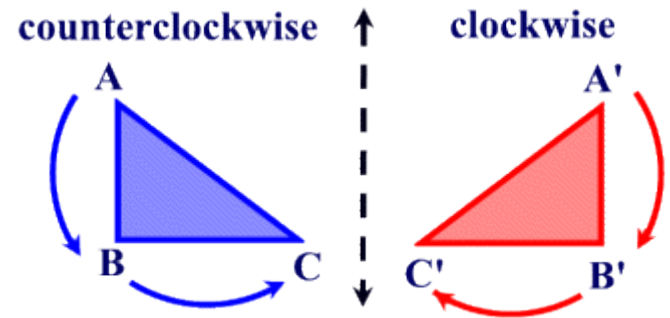
Orientation can be helpful in describing and identifying transformations.

ADD the info below to your notes!!

If figures have the same orientation, your transformation is a **translation** or a **rotation**.



If figures have opposite orientation, your transformation is a **reflection**.



Can't tell what transformation you have? Check the orientation to narrow down your choices! 😊



**Practice:**

**Compositions of  
Transformations with  
Coordinates  
AND Algebra Rules**

**Notes p.21 & 22**

# Answers

## Practice 1: Notes p.21

1) 5

5) 1

2) 3

6) 2

3) 5

7) 1

4) 7

8) 4



# Answers Notes p.22

1) Translate the triangle 4 units right and 2 units up, and then reflect the triangle over the line  $y=x$ .

$$(x, y) \rightarrow (x+4, y+2)$$

$$(x, y) \rightarrow (y, x)$$

$$(x, y) \rightarrow (y+2, x+4)$$

2) Rotate the triangle 90 degrees counter clockwise, and then dilate the figure by a scale factor of 3.

$$(x, y) \rightarrow (-y, x)$$

$$(x, y) \rightarrow (3x, 3y)$$

$$(x, y) \rightarrow (-3y, 3x)$$

3) Translate the triangle 4 units left and 2 units down, and then reflect the triangle over the  $y$ -axis.

$$(x, y) \rightarrow (x-4, y-2)$$

$$(x, y) \rightarrow (-x, y)$$

$$(x, y) \rightarrow (-(x-4), y-2)$$

4) Rotate the triangle 90 degrees clockwise, and then dilate the figure by a scale factor of  $1/3$ .

$$(x, y) \rightarrow (y, -x)$$

$$(x, y) \rightarrow \left(\frac{1}{3}x, \frac{1}{3}y\right)$$

$$(x, y) \rightarrow \left(\frac{1}{3}y, -\frac{1}{3}x\right)$$



# Answers Notes p.22 cont.

5) Translate the triangle 4 units right and 2 units down, and then reflect the triangle over the x-axis.

$$(x, y) \rightarrow (x+4, y-2)$$

$$(x, y) \rightarrow (x, -y)$$

$$(x, y) \rightarrow (x+4, -(y-2))$$

6) Rotate the triangle 180 degrees counter clockwise, and then dilate the figure by a scale factor of 2.

$$(x, y) \rightarrow (-x, -y)$$

$$(x, y) \rightarrow (2x, 2y)$$

$$(x, y) \rightarrow (-2x, -2y)$$

7) Translate the triangle 4 units left and 2 units up, and then reflect the triangle over the line  $y=x$ .

$$(x, y) \rightarrow (x-4, y+2)$$

$$(x, y) \rightarrow (y, x)$$

$$(x, y) \rightarrow (y+2, x-4)$$

8) Rotate the triangle 180 degrees clockwise, and then dilate the figure by a scale factor of  $1/2$ .

$$(x, y) \rightarrow (-x, -y)$$

$$(x, y) \rightarrow (\frac{1}{2}x, \frac{1}{2}y)$$

$$(x, y) \rightarrow (-\frac{1}{2}x, -\frac{1}{2}y)$$

# Homework

- Packet p. 18-20 odds  
Packet p. 16-17 Evens and #1



Print HW Packet Day 5-7, if not yet! That's where tonight's homework is located